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EMPLOYING THE BASIC TEXTILE STRUCTURES TO ENRICH THE AESTHETICS OF NECKLACES TO SERVE THE LABOR MARKET

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ABSTRACT

The textile industry is not considered a modern industry. Rather, it was known before history since ancient times. No ancient civilization is devoid of traces that indicate that the textile industry was practiced in varying degrees. Ordinary woven fabrics consist of overlapping longitudinal threads (warps) with transverse threads (wefts) at right angles. The research problem appears in the following questions: What are the methods of basic textile structures, what is the possibility of employing and adapting the method of textile structures to enrich the aesthetics of necklaces to serve the labor market. The goal of the research is to revive the methods of basic textile structures, identify their types and how to use them to show the aesthetics of necklaces, find new formative solutions for the design and implementation of necklaces using neutral colours suitable to the requirements of the times to open a field in the labor market. The research hypothesis stipulates the possibility of employing basic textile structures by using neutral colours in designing and enriching the aesthetics of making necklaces in a way that matches the requirements of fashion and opens markets for work. 10 designs of necklaces were executed using basic textile structures and their derivatives and applied to a black and white fashion design. A questionnaire consisting of 4 main axes and 13 sub-items was designed to evaluate necklaces in terms of aesthetic and functional values, keeping pace with contemporary fashion, design feasibility, and marketing potential. Results were processed statistically and graphically to prove the research hypothesis and to find the relationship between the evaluation factors (questionnaire axes) and the results confirmed the achievement of the research hypothesis and study objectives.

KEYWORDS: Aesthetic Values, Basic Textiles Structure, Design Feasibility, Fashion Design, Functional Values, Necklaces, Small Projects

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Original Article

1. INTRODUCTION

The art of weaving is one of the arts that has been known since ancient times and was used to meet the necessary needs. The latter used the textile components of raw materials, techniques and methods of basic textile structures as a goal to express the freedom of performance, formation, creativity and innovation, and to depart from what is customary in this field (Fouad, 2017).

The necklaces are one of the most important clothing accessories, as they play a key role in beautifying the outfit and clarifying the threads in the clothes. The costume model may be very simple, and although it is not considered part of the clothes, it gives the woman an attractive and new form, which is one of the important things in the world of fashion design.

Necklaces are linked to the fashion in which various styles and innovative new treatments have spread to keep pace with different tastes by finding innovative formative solutions using basic weaving methods to satisfy the tastes of women looking for excellence, as well as opening job opportunities that generate an economic return on the individual and society.

Research Problem

- What are the basic weave structures methods?
- What is the possibility of employing and adapting the method of weave structures to enrich the aesthetics of necklaces in a way that serves the labor market?
- What are the opinions of specialists about necklaces executed in the style of weaving structures?

Research Goals

- Reviving the methods of basic textile structures and identifying their types and how to use them to show the aesthetics of necklaces.
- Finding new formative solutions to design and implement necklaces using neutral colours in line with the requirements of the modern era to open up a field in the labor market.
- Identifying the extent to which specialists accept the executed necklaces.

Research Significance

- Finding new craft methods in supporting and developing small production projects in the field of textile and fashion design.

Research Hypotheses

The possibility of employing the basic weave structures using neutral colours in designing and enriching the aesthetics of making necklaces in a way that matches the requirements of fashion and opens new markets.

Research Methodology

This research follows the experimental approach through executing the weave different structures and used them in designing the necklaces.

Research Tools

- A questionnaire to evaluate the experimental work of the research.

PREVIOUS STUDIES:

1- Study (Al-Eisi, 2021): entitled "The role of material in multiple aesthetic values to enrich contemporary Saudi jewelry"

This study aimed to shed light on the local environmental materials and ways of forming them to benefit from them in the implementation of artistic crafts, combining raw materials to enrich the aesthetic values of contemporary jewelry crafts, to produce innovative crafts, diversity and innovation in the methods of forming Saudi jewelry crafts. The study concluded

that diversity, development and experimentation in dealing with local environmental raw materials provide an opportunity for a plurality of aesthetic values to enrich jewelry crafts. It agreed with the current study in the production of jewelry and differed from it in the use of environmental materials and not the textile compositions of fabrics (Al-Eisi, 2021).

2. Study (Barakat, 2021): entitled "The Formal rhythm of textile structures as a creative motivation for designing textile jewelry"

This study aimed to reveal new formulations of handmade textiles through contemplation of marine organisms, achieving the functional aspect of pre-woven textile pieces in the production of jewelry of functional and aesthetic value, liberating the textile material from the traditional methods of the form of textile work, and 10 diverse artworks were presented for necklaces. A bodice based on making designs from marine creatures and using pre-woven fabrics of different textures. It agreed with the current study in the use of textile structures to produce textile jewelry and it differed in the dependence on marine organisms in the design basis (Barakat, 2021).

3. Study (Sabbagh, 2019): entitled "Plastic aesthetics of necklaces in fashion design"

The study aimed to produce a group of different necklaces in colour, material and shape to enrich fashion design, producing different costumes in colour, shape and material, making plastic solutions using necklaces that deal with two aspects: the effect of different necklaces on the same outfit, the effect of one necklace on different outfits. 5 different necklaces and 5 different fashion designs were used for design experiments. The research presented an aesthetic approach through the use of the necklace as an aesthetic value on the same outfit and different outfits. It agreed with the current study in the production of some necklaces and their employment with different costumes, and differed in not relying on textile structures as a basis for making the necklace (Sabbagh, 2019).

4. Study (Sabbagh, 2018): entitled "Establishing a training program for qualifying graduates in the field of necklaces production"

The study aimed to prepare and evaluate a proposed training program to qualify graduates to produce innovative necklaces, and determine the effectiveness of this program in qualifying graduates and providing them with the opportunity to acquire knowledge and skills to produce innovative necklaces, from the aspects of: Capabilities. It agreed with the current study in the implementation and production of necklaces and differed from it in relying on different methods and techniques in the implementation of necklaces (Sabbagh, 2018).

THEORETICAL FRAMEWORK:

Hand Weaving

It is a structural relationship between the warp longitudinal yarns and the weft transverse yarns in agreed –upon structures and system for the formation of woven surfaces (Eberle and etal., 2003).

Basic Weaving Structures, Methods and Techniques for Hand Weaving

The three textile structures (plain weave, twill weave, sateen weave) are the basis for the textile structures, and there is room for these types and their derivatives to create different designs and decorations that give the cloth a special and distinctive look (Nasr, Zoghbi, 2014) (Zaza and et al, 2004).

Plain Weave

Plain weave is one of the oldest types of weave structures known to man and the most common and used as the simplest and easiest type of weave structures (Al-Qobati et al., 2013).

The basic rule for drawing the plain weave structure is the exchange and the minimum number of threads for warp and weft. The plain weave can be two warp and two weft threads. This is called the repetition of the plain weave. Figure (1) shows two repetitions in the directions of warp and weft for the plain weave 1/1 and is repeated on four warp yarns and four weft yarns, and through that, it becomes clear to us that the weaving is made from the overlapping of two warp yarns with two weft yarns, in which the first edge passes under the individual warp threads and over the even threads (Wilson, 2001).

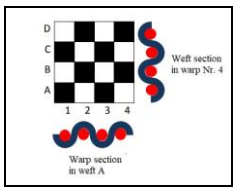


Figure 1: Plain Weave Structure

Plain Weave Deriv Atives

They are extensions of the plain weave to obtain different effects, and the extension is either in the direction of the warp and it is called a plain weave extending from the direction of the warp, or in the direction of the weft and is known as the plain weave that extends from the weft, or both for the purpose of obtaining different effects, and the extension is usually either in a regular way, that is, the extensions appear equal in dimensions in the weave or in an irregular way, so the extensions appear in the weave with irregular dimensions (Fouad, 2017) (Al-Qobati et al., 2013).

Warp Rib Weave

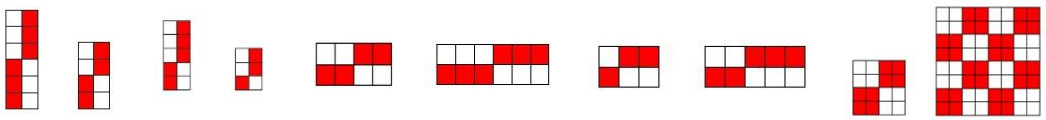
It is done by passing two or more wefts in one shift, either by using more than one shuttle (according to the number of wefts) or by using a shuttle of two or more wefts. It is done by following the rule of plain weaving that may be regular or irregular. If the extension is done by placing two wefts in one shift it is called warp rib 2/2, but if the extension is the result of the use of three threads of its flesh in the shift, it is called warp rib 3/3, and so on, as shown in figure (2-a) (Nasr, Zoghbi, 2014).

Weft Rib Weave

The construction of this type of weaving is done in a manner opposite to the method that was followed with the extension of the warp, meaning that every two or more adjacent warp threads move in one movement so that the weft thread passes above or below them. Figure (2-b) illustrates this structure (Nasr, Zoghbi, 2014).

Hopsack Weave

This type of weave is called hopsack, which extended from both directions, given that the number of warps is distributed evenly on each shaft, and the regular exchange in the shafts, as well as the number of times of lifting the shaft, is equal and regular. Figure (2-c) (Nasr, Zoghbi, 2014).



regular irregular regular irregular

(a): Warp Ribs (b): Weft Ribs (c): Hopsack

Figure 2: Plain Weave Derivatives.

Twill Weave Structure

Twill fabric is the second most widely used type of fabric, and it differs in its appearance from the plain fabric as a result of its construction method and the overlapping of warp and weft threads together. And the twill weave is generally characterized by the presence of the effects of diagonal lines at different angles, which are very clear in some fabrics than in others (Wilson, 2001).

The simplest type of twill weave is the one that is repeated from the use of three threads of warp with three threads of weft, and it is called 1/2 Twill. Likewise, the twill, which is woven repeatedly using four warp threads with four weft threads, is known as 2/2 Twill. These two types are the basis for all twill-derived fabric types (Zaza and et al, 2004).

Figure (3-a) is for a 1/2 twill weave, in which each warp thread passes over one edge and under two edges of the weft, or each weft passes over a warp and under two warps in succession. The yarns of the twill fabrics move next to each other, respectively, to the right or to the left, in the sense that the radial fabric whose lines are directed upwards to the right is known as the right hand twill, and on the contrary, the left hand is the one whose threads move successively upwards to the left (Zaher, 1997).

Twill Weave can be Divided into:

1- Warp and weft twill

First: The effect of warp or warp twill, in which the warp threads appear on the face of the fabric in an amount greater than the weft threads. An example of the warp twill is the 1/3 Twill, which is woven by passing the weft thread over two warp threads and under one thread as shown in figure (3-b) (Zaza and et al, 2004).

Second: The effect of weft, which is in contrast to the twill from the warp, and is characterized by the appearance of weft threads on the surface of the fabric in a greater amount than the warp threads. Figure (3-c) shows 1/3 Weft Twill (Zaza and et al, 2004).

Third: Effect of weft and warp or a regular chisel, and this type of chisel fabric shows that the warp and weft threads are even on both sides of the fabric, and its examples are the 2/2 Twill, which is woven by dividing the warp threads on each edge of the two sections being equal. Meaning that the weft thread passes over two threads and under two warp threads, as shown in figure (3-d) (Zahir, 1997).

(a): 1/2 Twill (b): 1/3 Warp Twill (c): 1/3 Weft Twill (d): 2/2 Twill

Figure 3: Twill Weave Structure.

1. Twill Weave Derivatives

We can obtain decorative effects from ordinary twill through many different effects can be obtained from simple twill (Wilson, 2001) whether regular or irregular.

a. Broken twill weaves

In this structure, the threads of repeating the weave structure are fragmented into parts and reversed marks are placed for what is present in the main part that is next to it, i.e. the sign is expressed without a sign, and the non-mark is expressed by a sign, as shown in figure (4-a) (Zaher, 1997).

b. Herring – Bone twill Weaves

The herring – bone twill is the most widely used type of derived twill, and this fabric is built from regulating the direction of the twill lines, where some twill lines pass in the right direction, for example, then reverses the direction and the twill lines go to the left, and the result is the appearance of a reflection effect in the direction of the twill lines on the surface of the fabric, which makes it take the shape of the back of a fish. In this type of twill, both neutral and special effect twill are used, taking into account the place of change of direction in the lines. Figure (4-b) shows a design for a herring – bone twill weave (Eberle and et al., 2003).

(a): Broken twill weave (b): Herring – Bone twill weave

Figure 3: Twill Weave Structure

Sateen/Satin Weave Structure:

Sateen/Satin fabric is characterized by its luster and drape. In this type of structure, one thread passes over a large number of weft threads on the surface of the fabric. The fabric is called sateen (and to obtain this composition, we need 4 threads for the warp and 4 weft threads at least, to implement the sateen fabrics, which are characterized as being soft. And shiny. The reason for the glossiness is due to the fewer lover points between the warp and weft threads, and the sateen fabrics are less durable and more flexible, and the fewer points of meshing between the warp and weft threads than in the previous compositions (plain weave and twill weave) for the same threads used in the same count, and the percentage of impregnation in them is low. The surface cloth of the face does not resemble its appearance from the back, since if we consider that the cloth is woven from two threads of different colours, we will find that when the first colour appears on the face of the cloth, the back of the cloth is of the other colour. To draw the sateen weave on the squares paper, it is shown in figure (4). The rule for drawing 5-End sateen, we write the numbers 1, 2, 3, 4, 5, we delete the first, last and penultimate number, and we have 2, 3, and you can use these two numbers in drawing the sateen 5 as shown in the figure (Fouad, 2017) (Zaher, 1997).

Figure 4: 5-End Sateen/Satin .

Necklaces:

A necklace or a chain is a type of jewelry or cloth that is placed around the neck. The necklaces are usually made of a chain of precious metal, often of high value, which may or may not serve as a substrate on which decorative items and accessories (such as strings of pearl, in chains, etc.) are attached. Precious stones or semi-precious are usually used, precious or woody stones, leather and shells.

The artist - the weaver - has taken many experiments to express an artistic vision that changes or enriches the aesthetic vision of jewelry. The different performance methods and techniques also allow greater freedom of expression to manipulate the textile ornaments and break them out of the ordinary. The importance of jewelry lies in the fact that the human body is the exhibition on which these works are presented, so that they become an integral part of the person who wears them, as they are considered works of art stemming from human values (Barakat, 2021). (Sabbagh, 2018).

2- EXPERIMENTAL STUDY

10 necklaces were executed using the plain weaving structures and its derivatives and the twill weave and its derivatives on the frame loom using cotton threads and relying on neutral colours with the addition of some supplements from different materials (beads - blocks - metal rings) to come up with innovative and aesthetic solutions characterized by modernity, innovation and contemporary fashion lines.

First: Description and Analysis of Necklaces Designs of the Practical Experiment

Below is a presentation of the description and analysis of the necklaces, weave structure and application on fashion. Table 1 to table 10 shows the ten necklaces and their descriptions.

Table 1: Description of the Method of Executing the First Necklace

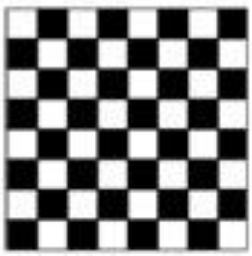
Description	Weave Structure	Final Recruitment of the Necklace	
Execution of plain weaving 1/1 in 4×4 repetition on the frame loom using black and beige cotton threads and adding blocks and beads in yellow, beige and black as a complement to the design.			 

Table 2: Description of the Method of Executing the Second Necklace

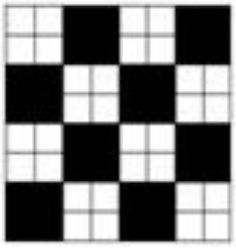
Description	Weave Structure	Final Recruitment of the Necklace	
Executing the plain weave extending in both regular directions 2/2 repeating 2×2 on the frame loom using cotton threads of three colors black, beige and yellow and adding a yellow block and colored beads at the tip as a complement to the design.			

Table 3: Description of the Method of Executing the Third Necklace

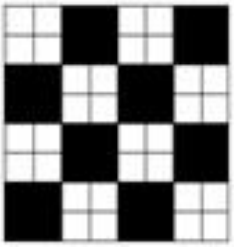
Description	Weave Structure	Final Recruitment of the Necklace	
Execution of the plain weave structure extending in both regular directions 2/2 repeating 2×2 on the frame loom in a decorative way using black and beige cotton threads and adding colored blocks in blue, yellow, orange and red colors and beads colored in the same colors of the blocks to add the traditional heritage character.			

Table 4: Description of the Method of Eexecuting the Fourth Necklace

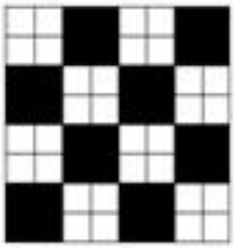
Description	Weave Structure	Final Recruitment of the Necklace	
Execution of the plain weave extending in both regular directions 2/2 repeating 2×2 on the frame loom using black cotton threads in the warp and weft in two shades of beige and yellow, and wooden beads were added in the same texture in yellow, green and red as a complement to the design.			 

Table 5: Description of the Method of Executing the Ffifth Necklace

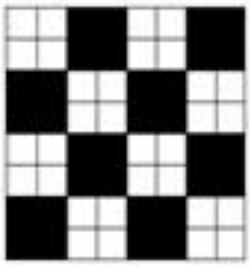
Description	Weave Structure	Final Rrecruitment of the Necklace	
Execution of the plain weave structure extending in both regular directions 2/2 repeating 2×2 on the frame loom in a decorative manner using cotton threads of three colors of black and two shades of beige. Blocks in black and beige, black beads and lead beads were added as a complement to the design.			 

Table 6: Description of the Method of Eexecuting the Sixth Necklace

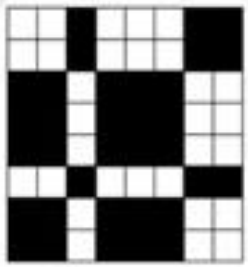
Description	Weave Structure	Final Recruitment of the Necklace	
Execution of the plain weaving composition extending in both directions, is installed on the frame loom using cotton threads, two shades of beige in warp threads, black in weft threads and coloured beads to give a heritage character.			 

Table 7: Description of the Method of Executing the Seventh Necklace

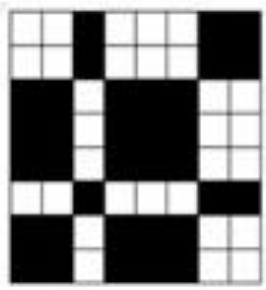
Description	Weave Structure	Final Recruitment of the Necklace	
Execution of the plain weaving structure extending in both directions, installed on the frame loom, using cotton threads and four colors of threads, black gray, two shades of beige, and adding colored beads of different sizes as a complement to the design.			 

Table 8: Description of the Method of Executing the Eighth Necklace

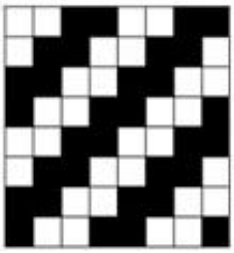
Description	Weave Structure	Final Recruitment of the Necklace	
Execution of the 2/2 twill weave in 2×2 repetition on the frame's loom using black and beige cotton threads and adding red and silver beads as a complement to the design.			 

Table 9: Description of the Method of Executing the Binth Necklace

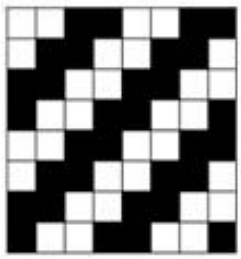
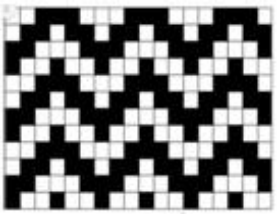
Description	Weave Structure	Final Recruitment of the Necklace	
Execution of the 2/2 twill weave by repeating 2×2 on the frame loom using black and beige cotton threads, adding lead and black beads and some metal pieces to add the traditional heritage character.			 

Table 10: Description of the Method of Executing the Tenth Necklace

Description	Weave Structure	Final Recruitment of the Nnecklace	
Execution of the weaving structure, 2/2 herring – bone twill weave repeated 3×3 on the frame loom, using beige cotton threads in the warp threads and black in the weft threads, with the addition of colored blocks and beads to add the traditional heritage.			 

Second: The Questionnaire

To examine the hypothesis of the study, which states "the possibility of employing the basic weave structures using neutral colours in designing and enriching the aesthetics of making necklaces in a way that matches the requirements of fashion and opens new markets." a questionnaire consisting of four main axes was designed to explore the evaluations to highlight the topic and the elements of the research and verify the study hypothesis and research aims. The four main axes included sub-paragraphs (13 inquiries) to assess the achievement of the main axes and their impact on the verification of the research hypothesis, and then the questionnaire was presented to (20) faculty members of Saudi universities in the field of specialization to evaluate (10) design combinations of various weave structures implemented for the necklace as a complement to the fashion.

ANALYSIS OF QUESTIONNAIRE RESULTS

First: the Questionnaire Variables

- Independent variables: It is the variable of the classification of the sample of arbitrators for the questionnaire (20) arbitrators (faculty members in Saudi universities in the field of specialization).
- Dependent variables: It is represented in monitoring and evaluating the response of the study sample to the questionnaire items, which are 10 items distributed in four axes, and the four axes of the questionnaire were named as follows:

  The first axis: Aesthetic values: It contains of three inquiries.

  The second axis: Functional values: It contains of three inquiries.

  The Third axis: Contemporary of fashion design of necklace: It contains of three inquiries.

  The fourth axis: Design feasibility and marketability: It contains of four inquiries.

To find out the direction of the opinions of the sample research to the questionnaire, the LIKERT scale was used.

3. RESULTS & DISCUSSION:

First: Reliability And Validity of the Questionnaire

To measure the stability of the study tool "the questionnaire", the equation (Alpha Crownbach) was performed on the results of the questionnaire data, on a total sample consisting of (20) refereed members. Table (11) shows the parameters of the stability of the study tool.

Table 11: Alpha Cronbach's

Questionnaire axes	N of Inquiries	N of Designs	N of Items	Alpha Cronbach's
First axis: Aesthetic values	3	10	30	0.949
Second axis: Functional values	3	10	30	0.937
Axis 3: Contemporary Fashion	3	10	30	0.976
Axis 4: Design Feasibility	4	10	10	0.984
General stability of the questionnaire	13	10	130	0.991

N of Items	Cronbach's Alpha
130	**0.991**

It is evident from the results of table (11) that the general stability coefficient for the four investigated axes is very high, reaching (0.991) for the total of the 13 inquiries of the questionnaire, while the stability of the four individual axes of the questionnaire is between (0.984) as a maximum and (0.937) as a minimum.

Conclusion: The questionnaire characterized by a very high degree of reliability and stability, which enables to be relied upon the actual application of the study.

Second: Validity of the Research Hypothesis

To verify the hypothesis of the study, which states "the possibility of employing the basic weave structures using neutral colours in designing and enriching the aesthetics of making necklaces in a way that matches the requirements of fashion and opens new markets.", an analysis of variance test was conducted.

Variance Analysis Test "One Way ANOVA"

To investigate the hypothesis of the study and the effect of the study axes in achieving that possibility or not, the one-way ANOVA variance analysis test was conducted in the following manner and steps:

1Test of Homogeneity of Variances

$H0 : \sigma 1 = \sigma 2 = \sigma 3 = \sigma 4$ $H1 : \sigma 1 \neq \sigma 2 \neq \sigma 3 \neq \sigma 4$ Statistical hypothesis:

Where:

(H_0): is the null hypothesis, it means that the variance between the groups is equal.

(H_1): is an alternative hypothesis, it means that the variance between groups is not equal.

Table 12: Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Mean	Based on Mean	.222	3	36	**.881**
	Based on Median	.190	3	36	**.902**
	Based on Median and with adjusted df	.190	3	33.041	**.902**
	Based on trimmed mean	.211	3	36	**.888**

Table (12) shows the results of the homogeneity test between samples, in which we find the P-value of the Levene test is between (0.88 to 0.90), which is a value greater than 0.05. So, we reject the alternative hypothesis and accept the null hypothesis, which is (homogeneity between the averages of the questionnaire axes, the study tool) as a condition for the validity of the variance test.

2- ANOVA Test

Formulation of the Statistical Hypothesis

The statistical hypothesis for the test was formulated as follows:

- $H_0 : \mu_1 = \mu_2 = \mu_3 = \mu_4$ $H_1 : \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$
- Where:
- (H_0): is the null hypothesis, which means that there are no statistically significant differences between the averages of the axes under study
- (H_1): is an alternative hypothesis, which means that there are differences between at least two of the averages of the axes of the questionnaire under study.
- (μ_1): averages of the values for the first axis, (μ_2): averages of the values for the second axis,
- (μ_3): averages of the values for the third axis, (μ_4): averages of the values for the fourth axis,

Table 13: One Way ANOVA

Questionnaire Axes	Mean	Std. Deviation	F	Sig.
Axis 1: Aesthetic values	90.2330	5.37669	0.497	.687
Axis 2: Functional values	89.5330	5.43040		
Axis 3: Contemporary Fashion	87.8670	4.35693		
Axis 4: Design Feasibility	88.3750	4.00043		

By conducting the one-way analysis of variance test (ANOVA) to determine whether there are statistically significant differences between the averages of the four axes of the questionnaire under study or not, and thus knowing the effect of those differences, where the data of table (13) show the results of the analysis of variance and statistical significance, where the values of (F) were equal to 0.497 with a probability value (P-value) 0.687, that means it came greater than 0.05. Consequently, it becomes evident that there is no statistically significant difference between the averages of the study axes at the level of significance 0.05. We reject the alternative hypothesis and accept the null hypothesis, which states that there are no statistically significant differences between the averages of the four axes of evaluation according to the questionnaire under study.

Thus, the research hypothesis was achieved: "The possibility of employing textile structures using neutral colours in the design and enrichment of the aesthetics of making necklaces in a way that matches the requirements of fashion and opens markets for work.

Third: Analysis of The Relationship Between the Variables of the Research Study

To analyze the relationships between the variables of the research study and its impact on the success of the research study objectives, two analysis tests were carried out:

1- Multiple linear correlation analysis, 2- Multiple linear regression analysis

1- Correlation Analysis Test

To estimate the degree of linear correlation and the direction of this linear relationship between the variables under study, a correlation matrix between the four evaluation axes of the questionnaire under study was calculated using the Pearson correlation coefficient.

Formulation of the Statistical Hypothesis

(H_0): $P = 0$ (H_1): $P \neq 0$

- Where: (H_0): is the null hypothesis, (H_1): is an alternative hypothesis, (P): is the correlation coefficient
- (H_0): is the null hypothesis, which means that the coefficient of linear correlation between variables is not significant and there is no relationship between them.
- (H_1): is an alternative hypothesis, which means that the coefficient of linear correlation between the variables is significant and not equal to zero and there is a relationship between them.

Table 14: Correlations Matrix

Questionnaire Axes		First Axis	Second Axis	Third Axis	Fourth Axis
First axis: Aesthetic values	Pearson Correlation	1	.953	.968	.966
	Sig. (2-tailed)		.000	.000	.000
Second axis: Functional values	Pearson Correlation	.953	1	.951	.961
	Sig. (2-tailed)	.000		.000	.000
Third axis: Contemporary Fashion	Pearson Correlation	.968	..951	1	.965
	Sig. (2-tailed)	.000	.000		.000
Fourth axis: Design Feasibility	Pearson Correlation	.966	.961	.965	1
	Sig. (2-tailed)	.000	.000	.000	

It is evident from table (14) that there is a very strong direct correlation, varying in degrees and strength, between each pair of the four study axes. Focusing on the relationship of each of the first, second and third axes with the fourth axis, which represents the goal of the study, we find that the correlation was positively very strong between each of the three study axes, both on the boundary with the fourth axis.

It is also noticed from the previous table that the value (P-value) between each couple of the four study axes was less than 0.01 in the first and third axes with the fourth axis and less than 0.05 in the second axis with the fourth axis. That is, it was significant, and therefore we reject the null hypothesis that assumes that there is no correlation between the study axes, and we accept the alternative hypothesis that the correlation relationship between the variables on the four axes of the study differs from zero.

2- Multiple Linear Regression Analysis

In order to analyze regression and estimate the mathematical model that express the causal relationship between the variables under study, it was based on the assumption that the fourth axis (design feasibility and marketability) as a dependent variable, and the rest of the evaluation axes (aesthetic values, functional values, contemporary fashion) as independent variables. Therefore, the multiple linear regression model was used.

Formulation of the Statistical Hypothesis

(H_0): $R = 0$ (H_1): $R \neq 0$

- Where: (H0): is the null hypothesis, (H1): is an alternative hypothesis, (R): is the regression
- (H_0): is the null hypothesis, which means that linear regression model between variables is non-significant, and there is an effect of the independent variables on the dependent variable that enables predictability.
- (H_1): is an alternative hypothesis, which means that linear regression model between variables is significant
- Y: denotes the dependent variable: the design, an artistic creation of a small production project.
- X1: for the first independent variable: Aesthetic values. X2: for the second independent variable: Functional values.
- X3: for the third independent variable: Contemporary fashion.

Table 15: Regression Model Summary

Dependent Variable	Predictive Variables	R	R Square	F	Sig.	B	T	Sig.
Design Feasibility	(Constant)	.978[a]	.957	44.099	.000[b]	17.802	2.237	.067
	Axis 1: Aesthetic Side					.245	.877	.414
	Axis 2: Functioning Side					.252	1.131	.301
	Axis 3: Contemporary Fashion					.295	.881	.412
Predictors: (Constant): axes 1,2,3								
Dependent Variable: axis 4								

From table (15) it was found that the value of the Pearson correlation coefficient between the independent variables and the dependent variable is equal to 0.978, with the value of the adjusted coefficient of determination (R Square) equal to 0.957. This means that the independent variables (X_1, X_2, X_3) explain 95% of the variance in the changes that occur in the dependent variable Y, which is considered a high degree, and the remaining percentage (5%), which is the rest due to other factors, including random error.

To determine the significance of the linear relationship between the independent variables and the dependent variable, the **statistical hypothesis of the linear regression test is formulated as follows:**

$H_0 : B_1 = B_2 = B_3 = 0$ $H_1 : B_1 \neq B_2 \neq B_3 \neq 0$

Where: (H_0): is the null hypothesis, (H_1): is an alternative hypothesis, B: is the slope of the linear regression model

(H0): is the null hypothesis, which means that there is no significant effect of the independent variables on the dependent variable.

(H1): is an alternative hypothesis, which means that there is a significant effect of the independent variables on

the dependent variable.

To calculate the multiple linear regression model, the following equation is used:

$$\mathbf{Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3}$$

Where: Y: the dependent variable (fourth axis),

X_1, X_2, X_3: the independent variables (first axis, second axis, third axis),

B_0: constant B_1: coefficient of the first independent variable,

B_2: coefficient of the second independent variable, B_3: coefficient of the third independent variable,

As the regression coefficients for the independent variables are:

$$\mathbf{B_0 = 17.802 \quad B_1 = 0.245 \quad B_2 = 0.252 \quad B_3 = 0.295}$$

By analyzing the results in table (10), we can predict the estimated model of the multiple linear regression equation as follows:

$$\mathbf{Y = 17.802 + 0.245 X_1 + 0.252 X_2 + 0.295 X_3}$$

Meaning that:

The success of design feasibility and marketability= 17.802 + 0.245 * aesthetic values + 0.252 * functional values + 0.295 * contemporary fashion

Fourth: Graphic Representation

The relative weight was calculated for evaluating the ten questionnaire inquiries in their four axes resulting from the arbitration of 10 necklaces designs that were implemented and evaluated by (20) specialized academic referees from different Saudi universities. Results of each axis were represented and analyzed separately, and in the end, the overall evaluation of the implemented designs was calculated through the results of the averages of the axes together, and therefore the success of the designs in achieving the research imposition was arranged through the overall evaluation of the designs.

Table 16: The Relative Weight of Designs eValuation through the Questionnaire

Necklace Nr.	Questionnaire Axes				Overall evaluation
	First axis	Second axis	Third axis	Fourth axis	
	Aesthetic Values	Functional Values	Contemporary Fashion	Design Feasibility	
Necklace 1	89.75	87.33	92.00	92.33	**90.35**
Necklace 2	88.75	90.33	90.00	93.00	**90.52**
Necklace 3	90.25	89.67	92.00	90.33	**90.56**
Necklace 4	95.50	96.00	98.33	99.67	**97.38**
Necklace 5	91.25	90.00	92.00	93.00	**91.56**
Necklace 6	87.25	87.67	89.67	89.33	**88.48**
Necklace 7	82.25	80.67	78.33	81.67	**80.73**
Necklace 8	88.50	87.33	89.33	89.33	**88.63**
Necklace 9	82.00	81.67	83.00	81.67	**82.08**
Necklace 10	88.25	88.00	90.67	92.00	**89.73**
Average	**88.38**	**87.87**	**89.53**	**90.23**	**89.00**

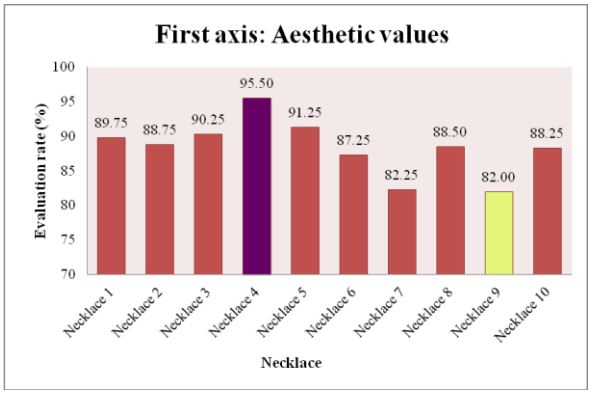


Figure 5: Evaluation of the first axis: Aesthetic values

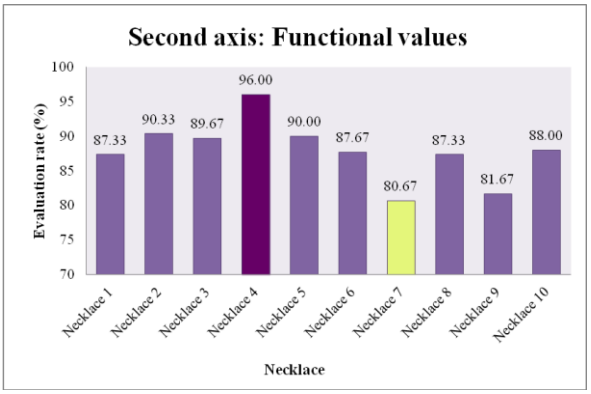


Figure 6: Evaluation of the second axis: Functional values

From table (16) and figure 5, it can be found that the most consistent design for the first axis that measures the achievement of aesthetic values is necklace Nr. 4. The evaluation ration reached (95.50%), while the necklace Nr. 9 scored the lowest rate (82.00%). The verification average of the first axis in the ten implemented necklaces is (88.38%), registering the third place among the four axes, according to the arbitrators evaluation

Results in figure.6 and table (16) confirmed that the most suitable designs for the second axis concerned with achieving functional values is the necklace Nr. 4 The evaluation score reached (96%), while the necklace Nr. 7, scored the lowest score for the second axis, the verification rate in it reached (80.67%). The verification average of the second axis in the ten implemented necklaces is (87.87%), registering the fourth and last place among the four axes, according to the arbitrators evaluation.

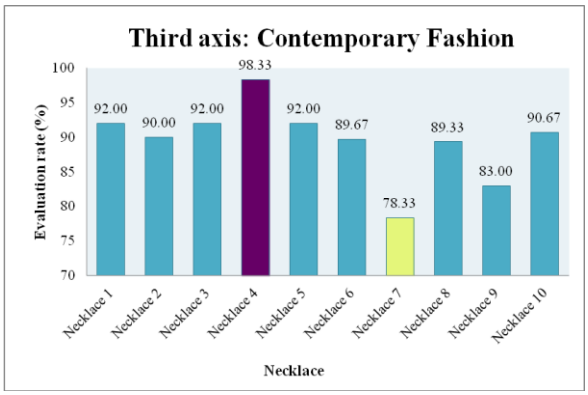


Figure 7: Evaluation of the third axis: Contemporary Fashion

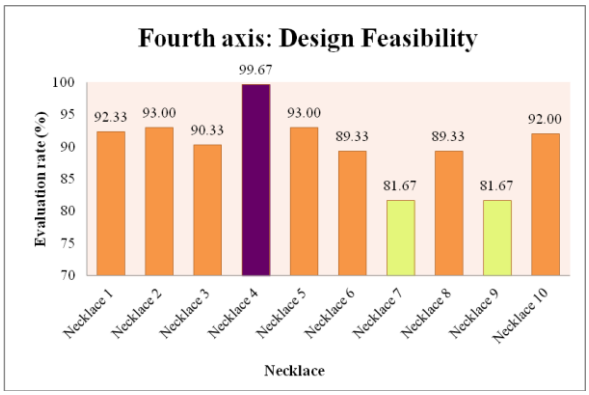


Figure 8: Evaluation of the fourth axis: Design feasibility and marketability

Table 16) and figure 7 show that the highest evaluation score for the third axis for assessing the contemporary fashion of the implemented necklaces was recorded for the necklace Nr. 4. The evaluation rate was (98.33%), while the necklace Nr. 7 showed the lowest score achieved for the third axis with a percentage of (78.33%). The verification average of the third axis in the ten necklaces was 89.53%), registering the second place among the four axes according to the evaluation of the arbitrators.

Table (16) and figure 8 show that the highest evaluation score for the fourth axis, which determines the success of Design feasibility and marketability was for the necklace Nr. 4 and the evaluation rate reached (99.67%), while necklace

Nr. 7 and necklace Nr. 9 shared the lowest score among the fourth axis with a rate of achievement (81,67%). The verification averages of the fourth axis the ten necklaces (90.23%), registering the highest and the first position among the four axes according to the evaluation of the arbitrators.

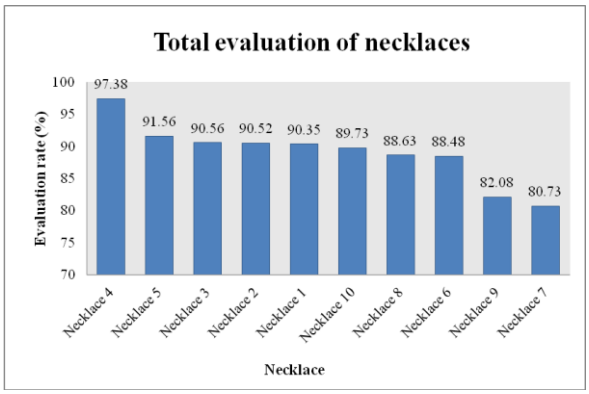


Figure 9: Arranging the Designs According to the Overall Evaluation.

By analyzing the overall evaluation of the four axes designed to present the success of the idea of the possibility of employing the basic weave structures using neutral colours in designing and enriching the aesthetics of making necklaces in a way that matches the requirements of fashion and opens new markets. Designs were arranged and presented in figure 9. Results show that the necklace Nr. 4 scored the highest rating (97.38%) as a total evaluation. In order to achieve the research objectives, the necklace Nr. 5 is followed by (91.56%) as the best second design, then the necklace Nr. 3 (90.56%) as the third best design, while the necklace Nr. 7 scored the lowest evaluation score (80.73%) among the ten necklaces designs. The average rate of achievement of the overall evaluation of the four axes in the ten designs was (89%), which is a high percentage indicating the good selection of the research axes and achieving the desired research objectives of the success of possibility of employing the basic weave structures using neutral colours in designing and enriching the aesthetics of making necklaces in a way that matches the requirements of fashion and opens new markets.

4. CONCLUSIONS

Based on the above from the statistical and graphical analysis, the study reached the following results:

- Variation: There were no statistically significant differences between the averages of the four axes of evaluation according to the questionnaire under study. This is due to the fact that the averages of the study axes are convergent in value and thus close in influencing the success of employing decorative design as an artistic development for a small production project.
- The research hypotheses verify the possibility of employing textile structures using neutral colors in the design and enrichment of the aesthetics of making necklaces in a way that matches the requirements of fashion and opens markets for work.
- The correlation relationship: between the variables under study there was a very strong and significant correlation, meaning that it was not equal to zero, which means that the axes of the questionnaire under study complement each other and do not repel each other, but rather combine together to achieve research hypotheses
- Regression model: It is a significant model and the results explain the effect of the three independent variables on

the dependent variable. Therefore, predictions can be made through these independent variables that explain 95% of the variance in design feasibility and marketability.

- Through the graphic representation of the design evaluation results, it was possible to reach the best necklace design in terms of achieving each of the study axes separately, and it was also possible to arrange the designs in terms of the overall evaluation of the four axes of the questionnaire. Results showed, that necklace Nr. 4 is the best necklace design in all of the four evaluation axes.

RECOMMENDATIONS

- Increasing interest in employing simple, complex and advanced textile structures in works of art and crafts of various ornaments.
- Increasing interest in the textile craft and employing it optimally in opening new horizons for establishing small projects.

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